

Asymptotic behaviour of the non-autonomous 3D Navier–Stokes–Voigt equations

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Abstract. We consider a non-autonomous problem for the incompressible Navier–Stokes–Voigt equations

$$\frac{\partial}{\partial t}(u - \alpha^2 \Delta u) - \nu \Delta u + (u \cdot \nabla)u + \nabla p = f(t) \quad \nabla \cdot u = 0,$$

in a bounded domain $\Omega \subset \mathbb{R}^3$. We will present some results on the existence of several types of minimal pullback attractors for a suitable process associated to our problem. These will be obtained in the phase spaces H^1 and $D(A)$ (the domain of the Stokes operator). Moreover, regularity properties and several relationships among these families of attractors will be also established.

This is a contribution jointly done in collaboration with Pedro Marín-Rubio and José Real, from the University of Seville, and based on the research paper [1].

References

- [1] J. García-Luengo, P. Marín-Rubio, and J. Real, Pullback attractors for three-dimensional non-autonomous Navier–Stokes–Voigt equations, *Nonlinearity* **25** (2012), 905–930.